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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

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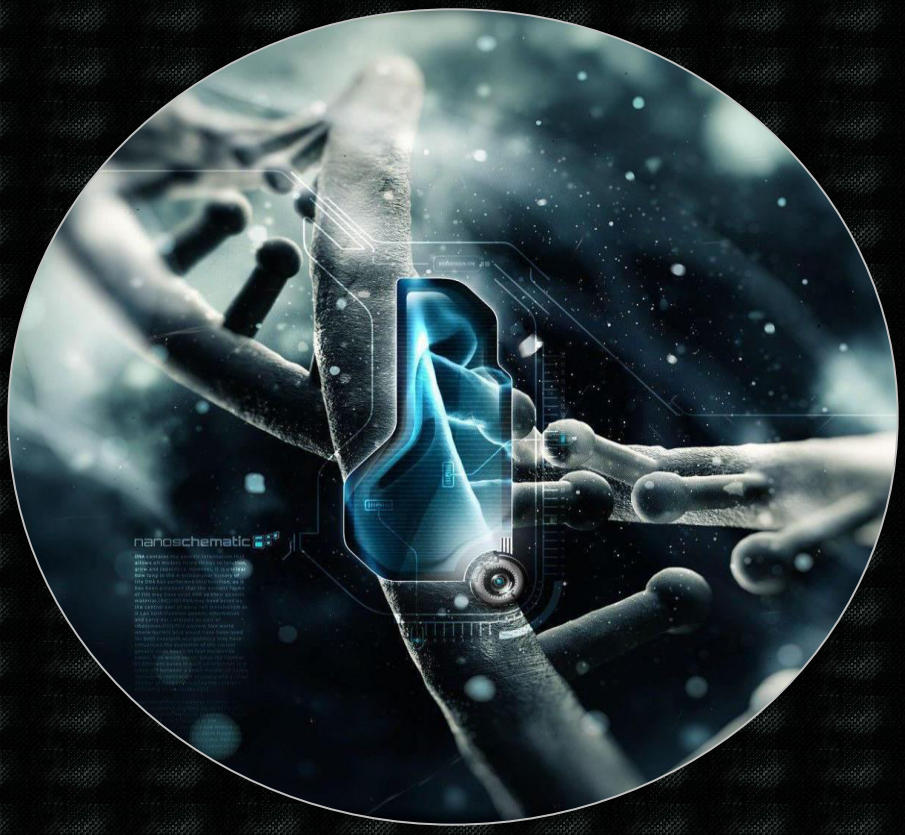

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SEPTEMBER 2019

RAY TRACING TECHNOLOGY IN COMPUTER GRAPHICS

Recently, the word “RTX” or “Ray tracing” has been a huge topic of interest in the gaming and technology world. This is because something that has once only been accessible by rich companies or high end studios has now been made accessible to the common man. Albeit with a heavy price tag, but nothing compared to the original price.

Nvidia has not only implemented Ray tracing technology into their latest graphics card line-up starting with the RTX 2060, but Is also the first company to do so. It renders in real time which means it can be perfectly implemented into video games.

So **what is RTX?**

Ray tracing is a rendering technique that creates more realistic light effects. By using ray tracing tech to simulate the physical behaviour of light, you’ll see it bounce off objects in the virtual world just as it would in reality. “Ray tracing” to put it simply, literally traces the physical movement and path of light to create hyper realistic graphics.

For e.g.: Look down at a puddle, and ray tracing should allow you to see your character’s face staring right back at you.

Here is an example,

Amin Shafiq

Social Media V/S Mental Health

For years, the running theory has been that social media is bad for mental health. We grin and bear it and keep scrolling through Facebook even though we "know" it causes us stress, sleep disturbances, and plenty of FOMO. But a new study has found that it's not all bad: Older adults who use social media are 63 percent less likely to experience serious psychological distress from one year to the next, including major depression or serious anxiety.

It turns out that previous studies on the mental health challenges around social media have focused on teens and young adults, who tend to be going through other life changes that could interfere with the findings. For older adults, it's looking like social media might not be all that harmful. In fact, it could even lower levels of psychological distress.

Past research also fails to consider the turbulent times today's teens and young adults have faced since social media appeared on the scene. "Taking a snapshot of the anxiety felt by young people today and concluding that a whole generation is at risk because of social media ignores more noteworthy social changes, such as the lingering effects of the Great Recession, the rise in single child families, older and more protective parents, more kids going to college and rising student debt," Keith Hampton, the lead researcher on the new social media study

Aryan C.R.

4 OF THE BEST PROGRAMMING LANGUAGES TO LEARN IN 2019

1. Python

Python is perhaps the most user-friendly programming language of any on this list. It's often said that Python's syntax is clear, intuitive and almost English-like, which, like Java, makes it a popular choice for beginners.

Also like Java, Python has a variety of applications that make it a versatile, powerful option when choosing the best programming language for your use case. If you're interested in back-end web development, for example, then the open-source Django framework, written in Python, is popular, easy to learn and feature-rich. Django has been used in the development of some popular sites like Mozilla, Instagram and Spotify.

Python also has packages such as NumPy and SciPy that are commonly used in the fields of scientific computing, mathematics and engineering. Other Python libraries such as TensorFlow, PyTorch and OpenCV are used to build programs in data science, machine learning, image processing, and computer vision. Python's science and data applications make it a great choice for the academically inclined.

2. Rust

Rust is a bit of an upstart among the other languages on this list, but that doesn't mean it's not a valuable language to learn. Stack Overflow's 2018 Developer Survey found that Rust was the most loved programming language among developers for the third year in a row, with 78 percent of Rust developers saying that they want to continue working with it.

Rust emphasizes writing "safe code" by preventing programs from accessing parts of memory that they shouldn't, which can cause unexpected behaviour and system crashes.

3. Java

Java, a general-purpose language, has been a mainstay in the world of computer programming for more than 20 years. The key to its popularity has been its “write once, run anywhere” philosophy. Theoretically, you can write Java software on any device, compile it into low-level machine code, and then execute it on any platform that’s equipped with a Java Virtual Machine (JVM). This means Java is highly cross-platform compatible.

Thanks to its versatility and ubiquity, Java is a common language for beginners to learn, and it’s used in many introductory programming courses.

4. C/C++

C is an old-school programming language that’s still alive and well today. First introduced in the 1970s, C has had a powerful influence on the computer programming landscape, despite its steep learning curve.

One of the most direct successors of C is the C++ programming language. C++ builds on C, which gives it many of the same advantages, but C++ is an object-oriented language and therefore is a better option when developing higher-level applications. C++ is a particularly popular choice for computer graphics, video games and virtual reality.

Gautham Salim

Products by Google

Google Glass

Augmented Reality has already gotten into our life in the forms of simulated experiment and education app, but Google is taking it several steps higher with Google Glass. Theoretically, with Google Glass, you are able to view social media feeds, text, Google Maps, as well as navigate with GPS and take photos. You will also get the latest updates while you are on the ground. It's truly what we called vision, and it's absolutely possible given the fact that the Google's co-founder, Sergey Brin has shown the glass with skydivers and creative's. Currently the device is only available to some developers with the price tag of $1500, but expects other tech companies trying it out and building an affordable consumer version.

Anita Martin

GOOGLE STADIA

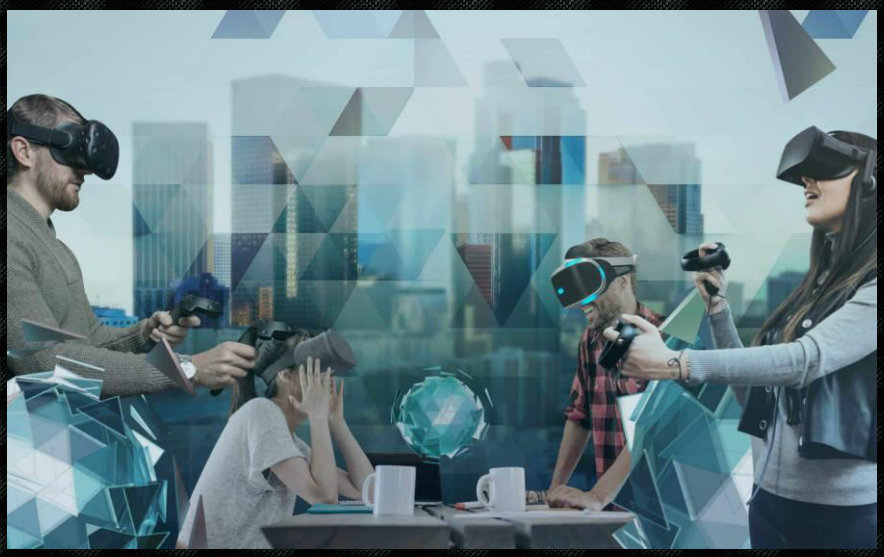
Stadia is a cloud gaming service operated by Google. It is said to be capable of streaming video games up to 4K resolution at 60 frames per second with support for high-dynamic-range, to players via the company's numerous data centers across the globe, provided they are using a sufficiently high-speed Internet connection. It will be accessible through desktop Google Chrome web browser, on smartphones, smart televisions and tablets, or through Chromecast.

It is compatible with HID class USB controllers; though a proprietary controller manufactured by Google with a direct Wi-Fi link to data centers will be available alongside the service. Stadia require users to purchase games to stream via Stadia rather than pay for access to a library of games. While the base service will be free, a Pro tier monthly subscription allows users to stream at higher rates for larger resolutions, and the offer to add free games to their library.Known in development as Project Stream.

Amal hafiz

Virtual Reality and Augmented Reality

Virtual Reality (VR) immerses the user in an environment while Augment Reality (AR) enhances their environment. Although VR has primarily been used for gaming thus far, it has also been used for training, as with VirtualShip, a simulation software used to train U.S. Navy, Army and Coast Guard ship captains. The popular Pokemon Go is an example of AR.



Both have enormous potential in training, entertainment, education, marketing, and even rehabilitation after an injury. Either could be used to train doctors to do surgery, offer museum-goers a deeper experience, enhance theme parks, or even enhance marketing, as with this Pepsi Max bus shelter.

Joshvvin Joshy

Algorithm for New Scientific Discoveries

It is a fact that there's an unfathomably large quantity of published scientific research out there, and scientists can only hope to fully comprehend a small fraction of it. That means they could be missing some truly Earth-shattering discoveries. To utilize this vast data, a team of researchers used the concept behind assistant apps like SIRI or Google Assistant, Natural Language Processing and specifically word embedding; where machine learns the usage of a word based on a variety of individual dimensions, including the words it usually appears next to. In essence, it deciphers meaning from the words' relationships with each other.

The scientists at Berkeley Lab used a machine-learning algorithm called Word2Vec for this. They fed the algorithm a whopping 3.3 million scientific abstracts published between 1922 and 2018, comprising a vocabulary of half a million words. The journals used were cantered on or included studies on materials science and the algorithm demonstrated a deep understanding of the research.

“Without telling it anything about materials science, it learned concepts like the periodic table and the crystal structure of metals,” said Anubhav Jain, the lead researcher on the study. By only analysing the similarity between various words and the word "thermoelectric," the algorithm was able to identify new thermoelectric materials. That's a material that can efficiently convert heat to electricity.

To see if the algorithm could have made material discoveries that have since been made by actual scientists, they fed it studies that were at least a few decades old consequently, a substantial number of its predictions turned up in later studies, and a handful had been discovered in the intervening years.

It doesn't happen every day, but sometimes when machines and humans work together, truly great things can result.

Abhijith Krishna E.R

Project your brand into the future: Holographic technology

In light of the changing demographics of today's consumers, marketers and event agencies alike need solutions that cater to the short span of attention and added value on authenticity and personalisation.

This poses a few challenges for corporate event planners and brands. In trying to appeal to multiple generations, planners need to remember that all attendees want the same thing; the awe factor, value, and authenticity.

Enter Holographic Telepresence technology. The hologram buzz expands beyond just entertainment, increasingly becoming a breakthrough marketing solution in many spaces including brand experience.

Holograms: the what, how and most importantly WHY

AI coupled with Augmented reality gives rise to holographic telepresence technology which is created from Photorealistic Stereoscopic 3D Imaging. The image looks real from every angle, and to multiple viewers from different angles. This new technological advancement makes live two-way interactivity possible in the virtual realm to appear to be in reality.

The 3D imaging can be in real-time or as a pre-recorded video. Real-time presenters are able to see, hear, and interact with their audiences through motion tracking, gestures or mobile devices. This technology brings 2-way holographic interactivity to life and makes it possible for large events and conferences to gain access to speakers who might not be physically present or even alive.

GAYATHRI S

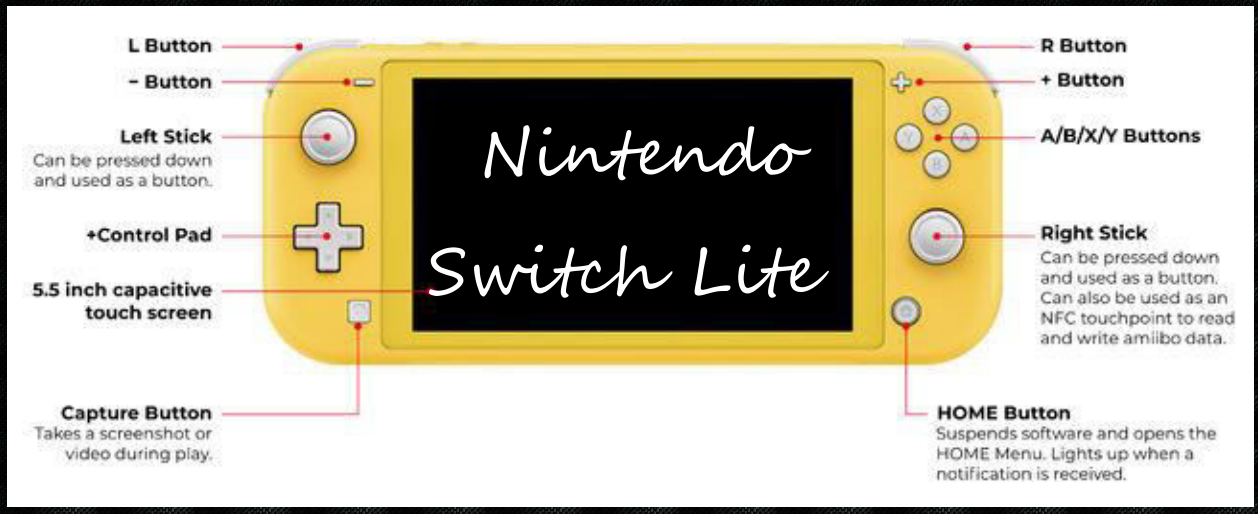
KALI LINUX

Kali Linux is a Debian-derived Linux distribution designed for digital forensics and penetration testing. It is maintained and funded by Offensive Security Ltd. Kali Linux has over 600 preinstalled penetration-testing programs, including Armitage (a graphical cyber attack management tool), Nmap (a port scanner), Wireshark (a packet analyzer), John the Ripper password cracker, Aircrack-ng (a software suite for penetration-testing wireless LANs), Burp suite and OWASP ZAP web application security scanners.

It is a supported platform of the Metasploit Project's Metasploit Framework, a tool for developing and executing security exploits. Kali Linux has a dedicated project set aside for compatibility and porting to specific Android devices, called Kali Linux (NetHunter).

It is the first Open Source Android penetration testing platform for Nexus devices, created as a joint effort between the Kali community member "BinkyBear" and Offensive Security. It supports Wireless 802.11 frame injection, one-click MANA Evil Access Point setups, HID keyboard (Teensy like attacks), as well as Bad USB MITM attacks.

Akshay Shylesh



The **Nintendo Switch Lite** is an eighth-generation handheld gaming system developed by Nintendo in 2019, and is a smaller and lighter version of the mainstream Nintendo Switch.

The Switch Lite lacks detachable Joy-Cons and can't be docked into a TV, thus making it more suitable for play on the go and also serves as a more affordable option to gaming consumers. The console was announced in a trailer by Yoshiaki Koizumi on July 10th, 2019 before being released a couple of months later. It is available in an exotic range of yellow, turquoise and grey paint jobs, and is marketed at $200 dollars or the regional equivalent.

Unlike the original Nintendo Switch, the Nintendo Switch Lite cannot connect to a TV. The console has a smaller screen, allowing it to be taken on the go easier. There are no detachable

Joy-Cons, as they are integrated into the system. Additionally, instead of arrow buttons, there is a D-pad instead.

The device reportedly has a better battery life, having 4-7 hours versus the 3-6 hours of the original Nintendo Switch, but the revised models of the original platform have since been tweaked with an even battery life.

As such, the Switch Lite only directly supports games that can be played in handheld mode, retaining features like the Switch's gyroscopic sensors and Bluetooth, Wi-Fi, and NFC communication compatibility.

Abishek R

QUIZ:

1. Who invented Compact Disc?

Ans: James T Russel

2. Which day is celebrated as world Computer Literacy Day?

Ans: December 2

3. Who invented Java?

Ans: James A Gosling

4. Longhorn was the code name of?

Ans: Windows Vista

5. Who is known as the Human Computer?

India?

Ans: Shakunthala Devi

6. What is mean by Liveware?

Ans: People who work with the computer

7. Which computer engineer got Nobel Prize for literature in 2003?

Ans: J.M. Coetzee

8. 'Weaving The Web' was written by.....

Ans: Tim Burners Lee

9. What is Scareware?

Ans: Fake antivirus softwares

10. 'Do no evil' is tag line of .....

Ans: Google

11. First Indian cinema released through internet is....

Ans: Vivah

12. Rediff.com was founded by.....

Ans: Ajith Balakrishnan and Manish Agarwal

13. What is the extension of PDF?

Ans: Portable document format

14. Mows are a type of mouse for..... people.

Ans: Physically handicapped people

15. Expand RDBMS?

Ans: Relational Data Base Management System

16. Difference engine was developed by.....

Ans: Charles Babbage

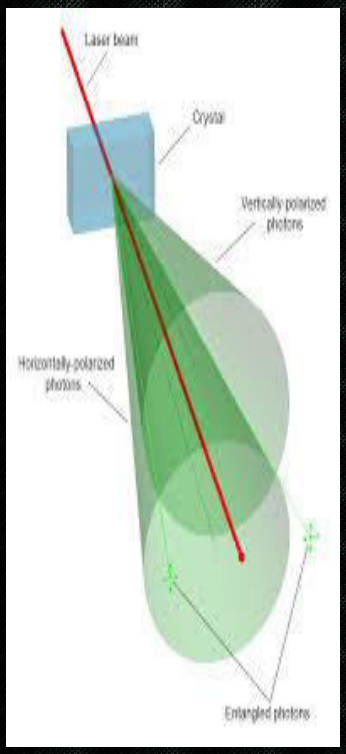
17. What is the expansion of SMS?

Ans: Short Message Service

Aparna Rajan

QUANTUM COMPUTING

Quantum computing is the area of study focused on developing computer technology based on the principles of quantum theory, which explains the nature and behavior of energy and matter on the quantum (atomic and subatomic) level.The essential elements of quantum computing originated with Paul Benioff, working at Argonne National Labs, in 1981. He theorized a classical computer operating with some quantum mechanical principles. But it is generally accepted that David Deutsch of Oxford University provided the critical impetus for quantum computing research. Development of a quantum computer, if practical, would mark a leap forward in computing capability far greater than that from the abacus to a modern day supercomputer, with performance gains in the billion-fold realm and beyond. The quantum computer, following the laws of quantum physics, would gain enormous processing power through the ability to be in multiple states, and to perform tasks using all possible permutations simultaneously. Current centers of research in quantum computing include MIT, IBM, Oxford University, and the Los Alamos National Laboratory.



Quantum theory's development began in 1900 with a presentation by Max Planck to the German Physical Society, in which he introduced the idea that energy exists in individual units (which he called "quanta"), as does matter. Further developments by a number of scientists over the following thirty years led to the modern understanding of quantum theory.

A Comparison of Classical and Quantum Computing

- Classical computing relies, at its ultimate level, on principles expressed by Boolean algebra, operating with a (usually) 7-mode logic gate principle, though it is possible to exist with only three modes (which are AND, NOT, and COPY). Data must be processed in an exclusive binary state at any point in time - that is, either 0 (off / false) or 1 (on / true). These values are binary digits, or bits. The millions of transistors and capacitors at the heart of computers can only be in one state at any point. While the time that the each transistor or capacitor need be either in 0 or 1 before switching states is now measurable in billionths of a second, there is still a limit as to how quickly these devices can be made to switch state. As we progress to smaller and faster circuits, we begin to reach the physical limits of materials and the threshold for classical laws of physics to apply.

- The Quantum computer, by contrast, can work with a two-mode logic gate: XOR and a mode we'll call QO1 (the ability to change 0 into a superposition of 0 and 1, a logic gate which cannot exist in classical computing). In a quantum computer, a number of elemental particles such as electrons or photons can be used (in practice, success has also been achieved with ions), with either their charge or polarization acting as a representation of 0 and/or 1. Each of these particles is known as a quantum bit, or qubit, the nature and behavior of these particles form the basis of quantum computing. The two most relevant aspects of quantum physics are the principles of superposition and entanglement.

Aswathy Rajan

THE MIRROR

A startup called Mirror attempts to reclaim your living spaces and bring those sought-after boutique classes, from yoga to strength training and Pilates, to your home all via–you guessed it–a single full-length mirror hung on your wall.

The responsive connected device has an LCD panel, stereo speakers, camera, and mic and offers a range of fitness classes and one-on-one training. And when you're done, it returns to a simple mirror. The entire system is controlled by a companion app, keeping the mirror fingerprint-free.

Mirror even takes injuries into account. If, for example, a user suffered a knee injury, they'll be excused from performing a jumping squat. Instead, a substitution video will guide them through a safer stationary squat.

Mirror launches today with more than 50 new streaming workouts each week, produced in part with instructors across categories. This includes cardio, yoga, strength training, barre, boxing, Pilates, and stretching classes, with levels ranging from beginner to expert. Live classes are available every hour, and members are free to access the digital archives.

Abhirami C A

3 Things to Know Before Cleaning Your Email List

1. A validation system should remove more than just invalid contacts.

As the Marketing Director at Image Source, Bruce Herwig runs email campaigns every week. He reached out to us after experiencing a very high bounce rate. “We knew that our list was questionable,” Bruce told me. “After a 19 percent bounce rate on our last campaign, we needed to do something."

All Bruce knew was that he wanted his campaigns to reach the inbox. “Removing invalid email addresses was top of mind,” he continued. But a good email validator has to do a lot more. If you’re in the market for one, make sure it also removes abuse emails, owned by people who label messages as spam; temporary emails, which auto-destroy in a short amount of time; spam traps, as their sole purpose is to block spammers; and role-based emails, which are monitored by groups of people, not individuals.

2. The system should offer you a real-time API.

Once you’ve cleaned your email list, you’re ready to start emailing again and give your campaigns a better chance to arrive in the inbox. But the truth is that data won’t stop decaying, and even the healthiest lists will go obsolete. Research shows this process happens at an average rate of 2.1 percent every month.

3. A dependable email validator handles your data responsibly.

Before you commit to any contracts, data protection is an important topic to bring up with your email validation experts. As you lend your customers’s information to a third party, how does that third party protect it? "Go with a vendor you trust on every level,” advises Jordie van Rijn, email marketing expert and MarTech selection advisor. “This isn’t a joke, because your email validation service will need access to the email addresses in your database in order to verify them. Make sure they’re a big enough company that has been around a couple of years, and ask about the security measures they take.”

Agheel Kareem

THANKYOU!!

-S3 CS1